

**REMARKS**

At the time of the Office Action dated November 17, 2003, claims 1-7 were pending and rejected in this application. Claims 1 and 4 have been amended to each recite that a steel material includes at least 0.53% of Si, consistent with Table 1 on page 13 of the specification. Claims 1 and 4 have also been amended to each include the limitations previously presented in claims 5 and 6. Consequently, claims 5 and 6 have been cancelled. Claim 7 has been amended to address a dependency issue arising from the cancellation of claim 6. Applicants submit that the present Amendment does not generate any new matter issue.

**CLAIMS 1- 4 ARE REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON  
MAEDA, U.S. PATENT NO. 6,197,128 (HEREINAFTER MAEDA '128) IN VIEW OF OCHI ET AL., EP  
0933440 (HEREINAFTER OCHI)**

On pages two through six of the Office Action, the Examiner asserted that it would have been obvious to one having ordinary skill in the art to modify Maeda '128 to limit the ranges for P, S, Al, Ti, O, and N, as taught by Ochi. This rejection is respectfully traversed.

On page three of the Office Action, the Examiner asserted:

Maeda teaches (see abstract) a rolling bearing component with a rolling bearing ring and a rolling element made from a composition as below. Maeda teaches (see abstract) that at least one of the rolling element and bearing ring are made from the composition. Therefore, Maeda teaches making the rings and the rolling elements from the composition.

Applicants respectfully disagree. The teaching in Maeda of "of at least one of the rolling bearing ring and the rolling element" does not identically correspond to the claimed limitation that "each" of an inner ring, an outer ring, and a rolling element are formed from the same

composition. For a reference to be fully disclosed under 35 U.S.C. § 103, each feature must be explicitly or inherently taught or suggested by the applied prior art. Although the Examiner has not asserted that this feature is inherently taught or suggested by Maeda '128, Applicants proceed on this basis because Maeda '128 does not explicitly teach this feature.

The Examiner, however, has failed to establish that Maeda '128 inherently discloses that each of an inner ring, an outer ring, and a rolling element are formed from the same composition. Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency.<sup>1</sup> To establish inherency, the extrinsic evidence must make clear that the missing element must necessarily be present in the thing described in the reference. Applying this law to the current situation, although Maeda '128 does not exclude having each of an inner ring, an outer ring, and a rolling element being formed from the same composition, Maeda '128 does not require that each of the inner ring, outer ring, and rolling element be formed from the same composition. Thus, the Examiner has not established that this limitation is inherently disclosed by Maeda '128. In this regard, the Examiner is also referred to M.P.E.P. § 2112, entitled "Requirements of Rejection Based on Inherency; Burden of Proof."

Applicants also incorporate herein the arguments previously presented in the Amendment filed August 29, 2003, regarding this same rejection. With regard to claim 4, the Examiner is required to establish that the applied prior art teaches or suggests the limitations of the claimed process. The Examiner's citation to the cases and M.P.E.P. § 2144.05 is misplaced since the

Examiner has neither established that claimed and disclosed ranges overlap nor established that the tempering range is an art-recognized, result-effective variable as that term is used in M.P.E.P. § 2144.05(II)(B).

Applicants also note that each of claims 1 and 4 have been amended to recite that the lower limit of Si is 0.53%. In contrast, Maeda '128 teaches that the percentage of Si is between 0.1% and 0.35% (column 2, lines 9-13). Thus, Maeda '128 teaches away from the claimed invention.

Claims 1 and 4 have also been amended to each include the limitations previously presented in claims 5 and 6. Specifically, claims 1 and 4 now recite that the tempering process is performed after the quenched steel material is subjected to secondary quenching, and the secondary quenching is performed after the quenched steel material is subjected to intermediate annealing. Applicants incorporate herein the arguments presented below in response to the rejections specifically addressing claims 5 and 6. For the reasons stated above, Applicants respectfully submits that the imposed rejection of claims 1-4 under 35 U.S.C. § 103 for obviousness based upon Maeda '128 in view of Ochi is not viable and, hence, solicit withdrawal thereof.

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<sup>1</sup> In re Rijckaert, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); In re Oelrich, 666 F.2d 578, 212 USPQ 323, (CCPA 1981).

**CLAIMS 5-7 ARE REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON**  
**MAEDA '128 IN VIEW OF OCHI AND FURTHER IN VIEW OF MARUTA ET AL., U.S. PATENT NO.**  
**4,885,905 (HEREINAFTER MARUTA)**

On pages six through seven of the Office Action, the Examiner asserted that it would have been obvious to one having ordinary skill in the art to modify the combination of Maeda '128 and Ochi in view of Maruta to add a intermediate annealing and secondary quenching step. This rejection is respectfully traversed.

Initially, this rejection is treated as if applied against claim 4, as the limitations claims 5 and 6 have been incorporated into claim 4. Applicants respectfully submit that the Examiner has not established a reasonable expectation of success in modifying the applied prior art in view of Maruta. Also, the Examiner has not established that heating to 840°C, as taught by Maruta, would have been recognized by one having ordinary skill in the art as corresponding to the claimed intermediate annealing step.

Maruta describes that steel being processed as formed from "[h]igh carbon chrome bearing steel (SUJ-2) containing Cr 1.5% and C 1%" (column 3, lines 44-44). Maruta also shows the carbon content of the steel in Fig. 1, which illustrates that the carbon content does not fall below 1%. In fact, Maruta focuses on the manipulation of the carbon content near the surface of the material so that the carbon content near the surface is greater than 1.5% (see column 1, line 65 through column 2, line 3). The claimed invention, however, is directed to a material that has "at least 0.1% and at most 0.4% of C." Thus, the material of the claimed invention and the material of Maruta have very different carbon contents.

Therefore, one having ordinary skill in the art would not have reasonably considered using Maruta in modifying the combination of Maeda '128 and Ochi since there is no reasonable expectation of success in modifying a material having a carbon content of 0.1-0.4% with a process meant for a material having a carbon content greater than 1.0%, particularly when the Examiner's proposed modification, as taught by Maruta, is directed to manipulating the carbon content of the material.

Notwithstanding that one having ordinary skill in the art would not have modified the combination of Maeda '128 and Ochi in view of Maruta, Applicants respectfully submit that the Examiner has mistakenly relied on the features of Maruta as teaching both the claimed intermediate annealing and secondary quenching step. The claimed invention recites a carburizing or carbo-nitriding process in addition to a (i) quenching step, followed by (ii) an intermediate annealing step, followed by (iii) a secondary quenching step and followed by (iv) a tempering step. Thus, the Examiner is relying upon Maruta to teach the above steps (ii) and (iii).

A review of Maruta, however, yields the following steps:

- (a) gas carburizing at 850-880°C for 15 hours (column 3, lines 45, 52-58);
- (b) quenching in oil at 850°C (column 3, line 46);
- (c-1) subzero treatment at -50°C (column 3, line 47); and
- (d) tempering at 200°C for 3 hours (column 3, lines 47-48).

As an alternate to the subzero treatment (c-1), Maruta also states that a secondary quenching step (c-2) at 840°C can be employed (column 3, lines 62-64). In the statement of the rejection, the Examiner is asserting that step (c-2) of Maruta corresponds to the claimed secondary quenching step (iii). The Examiner also asserted the following:

Regarding claim 6, Maeda is silent on the secondary quenching. Though Maruta et al do not expressly teach that the secondary quenching is preceded by intermediate annealing, Maruta et al teach (see col. 3, lines 59-64) that the steel is quenched from 840°C. Thus, heating to 840°C would precede the quenching. This heating to 840°C would constitute intermediate annealing.

Notwithstanding the Examiner's statement that the heating to 840°C would constitute intermediate annealing, the Examiner has failed to supply any factual basis that would support a finding that one having ordinary skill in the art would interpret the term "intermediate annealing" in this manner.

In contrast, page 17 of Applicants' specification states that the intermediate annealing process involves holding the material at a specific temperature for a significant amount of time (e.g., 60 minutes) and after the material is "cooled gradually in the furnace," the secondary quenching is performed after the temperature is again raised to a specific temperature (e.g., 850°C). The teachings of Maruta, however, only disclose a quenching step from 850°C. What is missing from the teachings of Maruta is a step of heating the material to a specific temperature for a significant amount of time and cooling the material prior to the quenching step (i.e., the claimed intermediate annealing). Thus, Applicants respectfully submit that Maruta fails to teach or suggest the claimed intermediate annealing step.

Thus, even if one having ordinary skill would have been motivated to modify the combination of Maeda '128 and Ochi in view of Maruta, the claimed invention would not result.

**Application No.: 09/930,172**

Applicants, therefore, respectfully submit that the imposed rejection of claims 5 and 6 (now incorporated into claims 1 and 4) and claim 7 under 35 U.S.C. § 103 for obviousness based upon Maeda '128 in view of Ochi and Maruta is not viable and, hence, solicit withdrawal thereof.

**CLAIMS 1-4 ARE REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON  
MAEDA ET AL., U.S. PATENT NO. 5,595,610 (HEREINAFTER MAEDA '610) IN VIEW OF OCHI  
AND FURTHER IN VIEW OF MITAMURA, GB 2,235,698**

On pages seven through ten of the Office Action, the Examiner asserted that it would have been obvious to one having ordinary skill in the art to modify Maeda '610 in view of Ochi and Mitamura to arrive at the claimed invention. This rejection is respectfully traversed.

Similar to Maeda '128, Maeda '610 also teaches that the percentage of Si is between 0.1% and 0.35% (column 2, lines 9-13). In contrast, each of claims 1 and 4 have been amended to recite that the lower limit of Si is 0.53%. Thus, Maeda '610 also teaches away from the claimed invention.

Applicants disagree with the Examiner's assertion on page 8 that the teaching by Mitamura of "at least one of the races and rolling element is made from the steel" corresponds to the claimed and that this assertion corresponds to the claimed limitation that "each" of an inner ring, an outer ring, and a rolling element are formed from the same composition. Similar to the arguments presented above with regard to Maeda '128, Mitamura does not explicitly teach that each of an inner ring, an outer ring, and a rolling element are formed from the same composition. Furthermore, the Examiner has not established that Mitamura inherently teaches this limitation.

Thus, the Examiner has improperly relied upon Mitamura to teach that each of an inner ring, an outer ring, and a rolling element are formed from the same composition.

Applicants also incorporate herein the arguments previously presented in the Amendment filed August 29, 2003, regarding this same rejection. In brief, the Examiner has failed to factually establish that one having ordinary skill in the art would have considered the compositions of the references to be close enough to one another to establish a "reasonable expectation of success." The Examiner's analysis merely consists of pointing out that the applied references have certain constituents with overlapping ranges. Therefore, one having ordinary skill in the art would not have considered the materials disclosed by Ochi, Maeda '610, and Mitamura to be so close that a process (i.e., tempering) used in one could be used with a reasonable expectation of success with a combination of the other materials. Therefore, Applicants respectfully solicit withdrawal of the imposed rejection of claims 1-4 under 35 U.S.C. § 103 for obviousness based upon Maeda '610 in view of Ochi and Mitamura.

**CLAIMS 5-7 ARE REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON  
MAEDA '610 IN VIEW OF OCHI, MITAMURA AND MARUTA**

This rejection is similar to the prior rejection of claims 5-7 except that the Examiner has replaced Maeda '128 with a combination of Maeda '610 and Mitamura. However, as previously argued, (i) Maeda '610 teaches away from the claimed invention; (ii) Mitamura does not teach that each of an inner ring, an outer ring, and a rolling element are formed from the same composition; (iii) the Examiner has failed to establish a reasonable expectation of success in combining Maeda '610, Ochi and Mitamura; and (iv) Maruta fails to teach the claimed intermediate annealing step.



Thus, one having ordinary skill in the art would not have arrived at the claimed invention based upon the combination of Maeda '610 in view of Ochi, Mitamura and Murata. Applicants, therefore, respectfully solicit withdrawal of the imposed rejection of claims 5 and 6 (now incorporated into claims 1 and 4) and claim 7 under 35 U.S.C. § 103 for obviousness based upon Maeda '610 in view of Ochi, Mitamura and Maruta.

**CLAIMS 1-4 ARE REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON  
OCHI IN VIEW OF MITAMURA**

On pages twelve through fourteen of the Office Action, the Examiner asserted that it would have been obvious to one having ordinary skill in the art to modify Ochi in view of Murakami to arrive at the claimed invention. This rejection is respectfully traversed.

Applicants note that this rejection uses the identical references to the previously rejection of claims 1-4 except that this rejection omits Maeda '610. In this regard, Applicants incorporate herein the arguments made in the previous rejection, as those arguments apply to this rejection. Specifically, the materials disclosed by Ochi and Mitamura are significantly different, and the Examiner has failed to factually establish that one having ordinary skill in the art would have considered the materials of these references to be close enough to one another to have a "reasonable expectation of success" in combining these references to arrive at the Examiner's asserted benefit. Also, Mitamura does not teach that each of an inner ring, an outer ring, and a rolling element are formed from the same composition, as previously discussed. Therefore, Applicants respectfully solicit withdrawal of the imposed rejection of claims 1-4 under 35 U.S.C. § 103 for obviousness based upon Ochi in view of Mitamura.

**CLAIMS 5-7 ARE REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON**

**OCHI IN VIEW OF MITAMURA AND MARUTA**

Applicants note that this rejection uses the identical references to the previously rejection of claims 1-4 except that this rejection omits Maeda '610. However, as previously argued, (i) Mitamura does not teach that each of an inner ring, an outer ring, and a rolling element are formed from the same composition; (ii) the Examiner has failed to establish a reasonable expectation of success in combining Ochi and Mitamura; and (iii) Maruta fails to teach the claimed intermediate annealing step. Thus, one having ordinary skill in the art would not have arrived at the claimed invention based upon the combination of Ochi in view of Mitamura and Murata. Applicants, therefore, respectfully solicit withdrawal of the imposed rejection of claims 5 and 6 (now incorporated into claims 1 and 4) and claim 7 under 35 U.S.C. § 103 for obviousness based upon Ochi in view of Mitamura and Maruta.

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. Accordingly, and in view of the foregoing remarks, Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

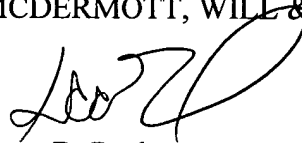
To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

**Application No.: 09/930,172**

including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Scott D. Paul", written over the firm name.

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